REMARKS

This amendment responds to the Office Action mailed on March 25, 2003, rejecting all claims (claims 1-62). Claims 1, 6, 11, 14, 17, 18, 28, 29, 30, 43, 46, 47, 48, 51, 54, 55, 56 and 61 have been amended. Note that independent claim 48 has been amended merely to correct a typographical error. No new matter has been added. Applicants respectfully submit that the application is now in condition for allowance. Accordingly, Applicants request reconsideration, removal of the rejections, and allowance of all of the pending claims.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102

The Office Action rejects claims 1-5, 10, 28, 31-53 and 61-62 under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,506,679 to Cooper et al. The Office Action states that:

> Cooper et al. teach of a device for measuring qualities of a substance comprising a sample cell for receiving the substance, a housing defining a recess for receiving a sample cell, at least one light source, at least one first detector spaced about the axis of the sample cell relative to the light source for receiving a measured signal, an amplifier for boosting the output signal, a processor coupled to the source and detector for activating the source and processing the output signal and a display coupled to the processor for displaying measurements.

(Office Action page 2).

Applicants respectfully traverse the rejections under 35 U.S.C. § 102(b).

CLAIMS 1-10

Claim 1, as amended, recites a "device for optically measuring qualities of a substance in ambient light comprising: at least one translucent wall defining a sample chamber for

receiving therein the substance to be measured and defining an axis; at least one first radiation source mounted adjacent to the sample chamber, wherein the first radiation source emits a modulated beam of radiation distinguishable from the ambient light based on said modulation; at least one first detector angularly spaced about the axis of the sample chamber relative to the first radiation source, wherein the first detector receives the modulated beam of radiation after passage through the sample chamber and substance to be measured therein, and generates a modulated output signal indicative of the intensity of the radiation of the beam impinging thereon; at least one second radiation source mounted adjacent to the sample chamber, wherein the at least one second radiation source emits a second modulated beam of radiation distinguishable from the ambient light and the modulated beam of the first radiation source based on said modulation; a controller coupled to the first radiation source and the first detector for activating the source and processing the output signal; and a display coupled to the controller for displaying measurement readings based on the output signals."

As further discussed below, Cooper et al. does not teach or suggest the recited combination of "at least one first radiation source" that "emits a modulated beam of radiation" and "at least one second radiation source" that "emits a second modulated beam of radiation distinguishable from the ambient light and the modulated beam of the first radiation source based on said modulation", as recited in amended claim 1.

Cooper et al. discloses an instrument useful for measuring turbidity in liquids (field of invention, col. 1, lines 6-7). The instrument includes a lamp and four light detectors (abstract). The light path includes lenses 31, 32, 33 and a light filter 34 (col. 3, lines 8-10). The beam is focused on the front surface of the sample cell (abstract). Transmitted light is measured by one of the detectors 40. Scattered light is detected by the other three detectors 42, 43 and 44 (col. 3, lines 8-11). The light energy impinging on each of the four detectors is electronically combined to calculate the turbitdity of the sample (col 4, lines 1-3).

Thus, Cooper discloses a lamp that produces a light beam. However, Cooper does teach or suggest a second light beam. Therefore, Cooper cannot teach or suggest the recited combination of "at least one first radiation source" that "emits a modulated beam of radiation" and "at least one second radiation source" that "emits a second modulated beam of radiation distinguishable from the ambient light and the modulated beam of the first radiation source based on said modulation", as recited in amended claim 1.

Consequently, Cooper does not teach or suggest a device comprising "at least one translucent wall defining a sample chamber for receiving therein the substance to be measured and defining an axis; at least one first radiation source mounted adjacent to the sample chamber, wherein the first radiation source emits a modulated beam of radiation distinguishable from the ambient light based on said modulation; at least one first detector angularly spaced about the axis of the sample chamber relative to the first radiation source, wherein the first detector receives the modulated beam of radiation after passage through the sample chamber and substance to be measured therein, and generates a modulated output signal indicative of the intensity of the radiation of the beam impinging thereon; at least one second radiation source mounted adjacent to the sample chamber, wherein the at least one second radiation source emits a second modulated beam of radiation distinguishable from the ambient light and the modulated beam of the first radiation source based on said modulation; a controller coupled to the first radiation source and the first detector for activating the source and processing the output signal; and a display coupled to the controller for displaying measurement readings based on the output signals", as recited in amended claim 1.

Nor do Wohlstein or Lilienfeld teach or suggest such a device.

Wohlstein discloses a device which passes light of preselected wavelengths through a fluid, gas, or vapor (abstract). The device uses two light sources 14, 16, each of which provides light at a preselected wavelength (col. 4, lines 12-13). The light is detected after it has passed through the fluid, gas, or vapor (abstract). According to Wohlstein, it is desirable to avoid having light at one wavength scattered through the fluid into the detector corresponding to the other wavelength (col. 5, lines 50-52). This is avoided by alternately "pulsing" or activating the respective light sources 14, 16 and simultaneously activating the corresponding detectors 15, 17. A modulator 28 is used to alternately activate and deactivats the respective light emitters and corresponding detectors 15, 17 (col. 5, lines 56-59). Because the detectors 15, 17 are inactivated by modulator 28, no "false" reading for the non-activated wavelength is created (col. 5, lines 64-66).

Thus, Wohlstein discloses two light sources 14, 16 and a modulator 28 that alternately pulses (or activates) the two sources. However, even if the light from each light source constitutes a modulated beam, the two modulated beams cannot be distinguished from one another based on said modulation. To avoid false readings, light at one wavength must be

prevented from reaching the detector corresponding to the other wavelength (col. 5, lines 50-52, 64-65), which is accomplished by deactivating the detector of the other wavelength . Consequently, Wohlstein does not teach or suggest two modulated beams, the second modulated beam being "distinguishable from . . . ambient light" and the first "modulated beam . . . based on said modulation", as recited in amended claim 1.

Lilienfeld discloses a system and method for monitoring airborne particulate. An exemplary configuration includes two light sources 14, 16 that provide two beams of light (Lilienfield, col. 5, line 27) at two different wavelengths (Lilienfield, col. 5, line 45). Control logic causes the activation of the two light sources to rapidly alternate and pulse (col. 5, lines 58-62).

However, in Lilienfeld, as with Wohlstein, even if the light from each light source constitutes a modulated beam, the two modulated beams cannot be distinguished from one another based on said modulation. Thus, Lilienfeld does not teach or suggest two modulated beams, the second modulated beam being "distinguishable from . . . ambient light" and the first "modulated beam . . . based on said modulation", as recited in amended claim 1.

Accordingly, reconsideration and allowance of claim 1 is respectfully requested.

Claims 2-10 depend from claim 1 and are therefore patentable for at least the same reasons as stated above for claim 1. Accordingly, reconsideration and allowance of claims 2-10 is respectfully requested.

CLAIMS 28-42

Claim 28, as amended, recites an "instrument for testing characteristics of a material comprising: a translucent cell for receiving a sample of the material; and a housing defining an aperture for receiving therein the translucent cell, the housing including: a first light source mounted within the housing adjacent to the aperture for emitting light at a first modulated frequency through the translucent cell placed in the aperture; at least one detector mounted within the housing and spaced angularly relative to the first light source adjacent to the aperture for converting the modulated light of the first light source into an electrical signal after the modulated light of the first light source passes through the translucent cell, wherein the electrical signal is modulated at the first modulated frequency; wherein the translucent cell

defines an optically refractive element necessary to focusing the modulated light of the first light source on the least one detector."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests a "translucent cell that "defines an optically refractive element necessary to focusing the modulated light of the first light source on the least one detector", as recited in amended claim 28.

Consequently, Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests an "instrument for testing characteristics of a material comprising: a translucent cell for receiving a sample of the material; and a housing defining an aperture for receiving therein the translucent cell, the housing including: a first light source mounted within the housing adjacent to the aperture for emitting light at a first modulated frequency through the translucent cell placed in the aperture; at least one detector mounted within the housing and spaced angularly relative to the first light source adjacent to the aperture for converting the modulated light of the first light source into an electrical signal after the modulated light of the first light source passes through the translucent cell, wherein the electrical signal is modulated at the first modulated frequency; wherein the translucent cell defines an optically refractive element necessary to focusing the modulated light of the first light source on the least one detector", as recited in amended claim 28.

Accordingly, reconsideration and allowance of claim 28 is respectfully requested.

Claims 29-42 depend from claim 28 and are therefore patentable for at least the same reasons as stated above for claim 28. Accordingly, reconsideration and allowance of claims 29-42 is respectfully requested.

CLAIMS 43-47

Claim 43, as amended, recites a "device for optically measuring qualities of a substance in ambient light comprising: first means defining a sample chamber for receiving therein the substance to be measured and defining an axis; second means mounted adjacent to the sample chamber for emitting a modulated beam of radiation distinguishable from the ambient light based on said modulation; third means mounted adjacent to the sample chamber for emitting a modulated beam of radiation distinguishable from the ambient light and the modulated beam of the second means based on said modulation; fourth means angularly spaced about the axis of the sample chamber relative to the second means for receiving the modulated beam of radiation after passage through the sample chamber and substance to be measured therein, and for generating a modulated output signal indicative of the intensity of the radiation of the beam impinging thereon; and fifth means coupled to the second and fourth means for activating the second means and processing the output signal."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests a device with "first means defining a sample chamber . . . second means . . . for emitting a modulated beam of radiation distinguishable from the ambient light based on said modulation means . . . [and] third means . . . for emitting a modulated beam of radiation distinguishable from the ambient light and the modulated beam of the second means based on said modulation", as recited in amended claim 43.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests a "device for optically measuring qualities of a substance in ambient light comprising: first means defining a sample chamber for receiving therein the substance to be measured and defining an axis; second means mounted adjacent to the sample chamber for emitting a modulated beam of radiation distinguishable from the ambient light based on said modulation; third means mounted adjacent to the sample chamber for emitting a modulated beam of radiation distinguishable from the ambient light and the modulated beam of the second means based on said modulation; fourth means angularly spaced about the axis of the sample chamber relative to the second means for receiving the modulated beam of radiation after passage through the sample chamber and substance to be measured therein, and for generating a modulated output signal indicative of the intensity of the radiation of the beam impinging thereon; and fifth means coupled to the second and fourth

means for activating the second means and processing the output signal", as recited in amended claim 43.

Accordingly, reconsideration and allowance of claim 43 is respectfully requested.

Claims 44-47 depend from claim 43 and are therefore patentable for at least the same reasons as stated above for claim 43. Accordingly, reconsideration and allowance of claims 44-47 is respectfully requested.

CLAIMS 48-50

Claim 48 recites a "method for optically measuring qualities of a substance in ambient light comprising the steps of: providing a sample chamber defining an axis for receiving therein the substance to be measured; providing at least two radiation sources mounted adjacent to the sample chamber; emitting modulated beams of radiation from the radiation sources, each source being modulated at a different frequency and, therefore, distinguishable from the ambient light and each other based on said modulation; providing at least one first detector angularly spaced about the axis of the sample chamber relative to the first radiation source; receiving the modulated beam of radiation by the first detector after passage through the sample chamber and substance to be measured therein; generating a modulated output signal indicative of the intensity of the radiation of the modulated beam impinging on the first detector; activating by a controller the first radiation source and the first detector; processing the modulated output signal; and providing a display for providing measurement readings based on the modulated output signal."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest a method that includes "emitting modulated beams of radiation from the radiation sources, each source being modulated at a different frequency and, therefore, distinguishable from the ambient light and each other based on said modulation", as recited in claim 48.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest a "method for optically measuring qualities of a substance in ambient light comprising the steps of: providing a sample chamber defining an axis for receiving therein the substance to be measured; providing at least two radiation

sources mounted adjacent to the sample chamber; emitting modulated beams of radiation from the radiation sources, each source being modulated at a different frequency and, therefore, distinguishable from the ambient light and each other based on said modulation; providing at least one first detector angularly spaced about the axis of the sample chamber relative to the first radiation source; receiving the modulated beam of radiation by the first detector after passage through the sample chamber and substance to be measured therein; generating a modulated output signal indicative of the intensity of the radiation of the modulated beam impinging on the first detector; activating by a controller the first radiation source and the first detector; processing the modulated output signal; and providing a display for providing measurement readings based on the modulated output signal", as recited in claim 48.

Accordingly, reconsideration and allowance of claim 48 is respectfully requested.

Claims 49-50 depend from claim 48 and are therefore patentable for at least the same reasons as stated above for claim 48. Accordingly, reconsideration and allowance of claims 49-50 is respectfully requested.

CLAIMS 51-55

Claim 51, as amended, recites an "instrument for determining a concentration of an impurity within a sample, comprising: (a) a housing defining a recess for receiving a sample chamber that has at least one memory and is adapted to receive the sample; (b) a source operatively connected to the housing for emitting optical energy through the sample; (c) a detector operatively associated with the housing for receiving the optical energy; and (d) at least one processor to communicate with the at least one memory."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an instrument comprising "a housing defining a recess for receiving a sample chamber that has at least one memory" and further comprising "at least one processor to communicate with the at least one memory", as recited in claim 51.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an "instrument for determining a concentration of an impurity within a sample, comprising: (a) a housing defining a recess for receiving a sample chamber that has at least one memory and is adapted to receive the sample; (b) a source

operatively connected to the housing for emitting optical energy through the sample; (c) a detector operatively associated with the housing for receiving the optical energy; and (d) at least one processor to communicate with the at least one memory", as recited in amended claim 51.

Accordingly, reconsideration and allowance of claim 51 is respectfully requested.

Claims 52-55 depend from claim 51 and are therefore patentable for at least the same reasons as stated above for claim 51. Accordingly, reconsideration and allowance of claims 52-55 is respectfully requested.

CLAIM 61

Claim 61, as amended, recites an "instrument for analyzing color and scattering of a sample, wherein the sample defines an axis, the instrument comprising: first means for defining a first meridional plane and including thereon second means for emitting a beam of radiation modulated at a first frequency, the second means mounted adjacent to the sample for emitting said beam of radiation through the sample, and third means for sensing angularly spaced about the axis of the sample relative to the second means, the third means generating a first output signal indicative of the intensity of radiation impinging thereon; fourth means for defining a second meridional plane and including thereon fifth means for emitting a beam of radiation modulated at a second frequency that is different than the first frequency, the fifth means mounted adjacent to the sample for emitting said beam of radiation through the sample, and sixth means for sensing angularly spaced about the axis of the sample relative to the fifth means for generating a second output signal indicative of the intensity of radiation impinging thereon; and seventh means for activating the first and fourth means and processing said output signals generated thereby.

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests "means for emitting a beam of radiation modulated at a first frequency . . . and . . . means for emitting a beam of radiation modulated at a second frequency that is different than the first frequency", as recited in amended claim 61.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests an "instrument for analyzing color and scattering of

a sample, wherein the sample defines an axis, the instrument comprising: first means for defining a first meridional plane and including thereon second means for emitting a beam of radiation modulated at a first frequency, the second means mounted adjacent to the sample for emitting said beam of radiation through the sample, and third means for sensing angularly spaced about the axis of the sample relative to the second means, the third means generating a first output signal indicative of the intensity of radiation impinging thereon; fourth means for defining a second meridional plane and including thereon fifth means for emitting a beam of radiation modulated at a second frequency that is different than the first frequency, the fifth means mounted adjacent to the sample for emitting said beam of radiation through the sample, and sixth means for sensing angularly spaced about the axis of the sample relative to the fifth means for generating a second output signal indicative of the intensity of radiation impinging thereon; and seventh means for activating the first and fourth means and processing said output signals generated thereby", as recited in amended claim 61.

Accordingly, reconsideration and allowance of claim 61 is respectfully requested.

Claim 62 depends from claim 61 and is therefore patentable for at least the same reasons as stated above for claim 61. Accordingly, reconsideration and allowance of claims 62 is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

The Office Action rejects claims 6-9, 18-27, 29-30 and 54-55 under 35 U.S.C. § 103(a) as being obvious over U.S. Pat. No. 5,506,679 to Cooper et al. in view of U.S. Pat. No. 6,055,052 to Lilienfeld. The Office Action states that:

> Cooper et al. lacks the teaching of a plurality of light sources. Lilienfeld teach [sic] of using a plurality of light sources. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use more than one light source in the apparatus taught by Cooper et al. as taught by Lilienfeld in order to create a more accurate device. By taking multiple measurements, which is well known in the art of optical measurements, one would obtain a more precise measurements. [sic]

> With reference to the light sources being at 45 degrees from each other, it would have been obvious to one having ordinary skill in the art at the time the invention was made to putt he sources at 45 degrees from each other, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

(Office Action page 3).

Applicants respectfully traverse the rejections under 35 U.S.C. § 103(a) on the grounds that the combination is improper because the Office Action has not presented **any evidence** to support the proposed motivation to combine the references. The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness, including suggestion or motivation to combine the references, reasonable expectation of the success of doing so, and the teaching or suggestion by the combined references of all claimed limitations (MPEP 2142). In order to try to satisfy this burden, the Office Action states that "it would have been obvious to one of ordinary skill in the art to use more than one light source in the apparatus taught by Cooper et al. as taught by Lilienfeld in order to create a more accurate device. By taking multiple measurements, which is well known in the art of optical measurements, one would obtain a more precise measurements". However, the Office Action does not specifically identify **any evidence** to support such suggestion or motivation.

Without such evidence, the combination is improper, and therefore, the rejection should be withdrawn.

In addition, as described below, Applicants also traverse the rejections on the grounds that the proposed combination does not teach or suggest the inventions recited in the claims.

CLAIMS 18-27

Claim 18, as amended, recites a "device for analyzing radiant transmission and scattering of an elongated sample, wherein the elongated sample defines an axis, the device comprising: a first channel defining a first meridional plane having the axis extending therethrough and including thereon at least one first radiation source mounted adjacent to the sample for emitting a first beam of radiation through the sample, and at least one first sensor

angularly spaced about the axis of the sample relative to the first radiation source for generating a first output signal indicative of the intensity of radiation impinging thereon; and a second channel defining a second meridional plane having the axis extending therethrough and including thereon at least one second radiation source mounted adjacent to the sample for emitting a second beam of radiation through the sample, and at least one second sensor angularly spaced about the axis of the sample relative to the second radiation source for generating a second output signal indicative of the intensity of radiation impinging thereon; wherein the at least one first sensor comprises a sensor for detecting radiation that is emitted from the at least one first radiation source and transmitted through the sample and further detecting radiation that is emitted from the at least one second radiation source and scattered through the sample".

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests at least one first sensor comprising "a sensor for detecting radiation that is emitted from the at least one first radiation source and transmitted through the sample and further detecting radiation that is emitted from the at least one second radiation source and scattered through the sample", as recited in amended claim 18.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teaches or suggests an "a "device for analyzing radiant transmission and scattering of an elongated sample, wherein the elongated sample defines an axis, the device comprising: a first channel defining a first meridional plane having the axis extending therethrough and including thereon at least one first radiation source mounted adjacent to the sample for emitting a first beam of radiation through the sample, and at least one first sensor angularly spaced about the axis of the sample relative to the first radiation source for generating a first output signal indicative of the intensity of radiation impinging thereon; and a second channel defining a second meridional plane having the axis extending therethrough and including thereon at least one second radiation source mounted adjacent to the sample for emitting a second beam of radiation through the sample, and at least one second sensor angularly spaced about the axis of the sample relative to the second radiation source for generating a second output signal indicative of the intensity of radiation impinging thereon; wherein the at least one first sensor comprises a sensor for detecting radiation that is emitted from the at least one first radiation source and transmitted through the sample and further

detecting radiation that is emitted from the at least one second radiation source and scattered through the sample", as recited in amended claim 18.

Accordingly, reconsideration and allowance of claim 18 is respectfully requested.

Claims 19-27 depend from claim 18 and are therefore patentable for at least the same reasons as stated above for claim 18. Accordingly, reconsideration and allowance of claims 19-27 is respectfully requested.

The Office Action rejects claims 11-17 and 56-60 under 35 U.S.C. § 103(a) as being obvious over U.S. Pat. No. 5,506,679 to Cooper et al. in view of U.S. Pat. No. 5,691,701 to Wohlstein et al. The Office Action states that:

> Cooper et al. lacks the teaching of the processor containing reference values.
>
> Wohlstein et al. teach of obtaining reference values.
>
> At the time of the invention, it would have been obvious to one of ordinary skill in the art to place reference values in the processor as shown by Wohlstein in order to see whether the measured values fall within the range of the preselected boundaries.

(Office Action page 4).

Applicants respectfully traverse the rejections under 35 U.S.C. § 103(a) on the grounds that the combination is improper because the Office Action has not presented **any evidence** to support the proposed combination. The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness, including suggestion or motivation to combine the references, reasonable expectation of the success of doing so, and the teaching or suggestion by the combined references of all claimed limitations (MPEP 2142). In order to try to satisfy this burden, the Office Action states that "it would have been obvious to one of ordinary skill in the art to place reference values in the processor as shown by Wohlstein in order to see whether the measured values fall within the range of the preselected boundaries". However, the Office Action does not specifically identify **any evidence** to support such suggestion or motivation.

Without such evidence, the combination is improper, and therefore, the rejection should be withdrawn.

In addition, as described below, Applicants also traverse the rejections on the grounds that the proposed combination does not teach or suggest the inventions recited in the claims.

CLAIMS 11-17

Claim 11, as amended, recites "instrument for measuring characteristics of a substance comprising: (a) a sample chamber for receiving therein a sample of the substance and defining an axis, the sample chamber having at least one optically refractive wall; and (b) a signal generator including at least one radiation source mounted adjacent to the sample chamber for emitting a beam of radiation through the sample chamber, and at least one detector angularly spaced about the axis of the sample chamber relative to the radiation source, wherein the detector receives the beam of radiation after passage through the sample chamber and substance to be measured therein, and generates an output signal indicative of the intensity of the radiation of the beam impinging thereon; wherein the at least one optically refractive wall has a refractive power adapted to focus said beam of radiation emitted from said at least one radiation source onto said at least one detector."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an instrument that comprises a sample chamber, at least one radiation source for emitting a beam of radiation, and at least one detector, wherein the sample chamber has "at least one optically refractive wall . . . [having] a refractive power adapted to focus said beam of radiation emitted from said at least one radiation source onto said at least one detector", as recited in amended claim 11.

Consequently, neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an "instrument for measuring characteristics of a substance comprising: (a) a sample chamber for receiving therein a sample of the substance and defining an axis, the sample chamber having at least one optically refractive wall; and (b) a signal generator including at least one radiation source mounted adjacent to the sample chamber for emitting a beam of radiation through the sample chamber, and at least one detector angularly spaced about the axis of the sample chamber relative to the radiation source, wherein the detector receives the beam of radiation after passage through the sample chamber and substance to be measured therein, and generates an output signal indicative of the intensity of the radiation of the beam impinging thereon; wherein the at least one optically refractive wall has a refractive power adapted to focus said beam of radiation emitted from said at least one radiation source onto said at least one detector", as recited in amended claim 11.

Accordingly, reconsideration and allowance of claim 11 is respectfully requested.

Claims 12-17 depend from claim 11 and are therefore patentable for at least the same reasons as stated above for claim 11. Reconsideration and allowance of claims 12-17 is respectfully requested.

CLAIMS 56-60

Claim 56 recites an "instrument for measuring characteristics of a substance comprising: (a) first means for defining a removable sample chamber for receiving therein a sample of the substance and defining an axis, said removable sample chamber having at least one memory; (b) second means mounted adjacent to the sample chamber for emitting a beam of radiation through the sample chamber and generating an output signal indicative of the intensity of the beam of radiation after passage through the sample; and (c) third means in communication with the at least one memory of the first means and in further communication with the second means, for receiving a signal from the second means based upon a sample within the first means."

Neither Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an "instrument comprising (a) first means for defining a removable sample chamber . . . having at least one memory; (b) second means . . . for emitting a beam of radiation through the sample chamber and generating an output signal indicative of the intensity of the beam of radiation after passage through the sample; and (c) third means in communication with the at least one memory of the first means and in further communication with the second means, for receiving a signal from the second means based upon a sample within the first means", as recited in amended claim 56.

Consequently, Cooper, nor Lilienfeld, nor Wohlfield, nor any proposed combination thereof, teach or suggest an "instrument for measuring characteristics of a substance comprising: (a) first means for defining a removable sample chamber for receiving therein a sample of the substance and defining an axis, said removable sample chamber having at least one memory; (b) second means mounted adjacent to the sample chamber for emitting a beam of radiation through the sample chamber and generating an output signal indicative of the intensity of the beam of radiation after passage through the sample; and (c) third means in communication with the at least one memory of the first means and in further communication

with the second means, for receiving a signal from the second means based upon a sample within the first means", as recited in amended claim 56.

Accordingly, reconsideration and allowance of claim 56 is respectfully requested.

Claims 57-60 depend from claim 56 and are therefore patentable for at least the same reasons as stated above for claim 56. Accordingly, reconsideration and allowance of claims 57-60 is respectfully requested.

Conclusion

This application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

Because the reasons above are sufficient to traverse the rejections, Applicants have not explored, nor do they now present, other possible reasons for traversing such rejections. Nonetheless, Applicants expressly reserve the right to do so, if appropriate, in response to any future Office Actions.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time.

If there is a fee occasioned by this response, including an extension fee that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/1631.

Respectfully submitted,

Date: September 25, 2003

Mark Steinberg (Reg. No. 40,829)
Cummings & Lockwood
Granite Square
700 State Street
P.O. Box 1960
New Haven, CT 06509
Tel: (860) 275-6719